Complying with Step 1 of the BC Energy Step Code for Part 9 Buildings

This bulletin clarifies the purpose of Step 1 and provides suggestions to assist building officials, Energy Advisors and builders working on Step 1 buildings. It is part of a series of three bulletins about the BC Energy Step Code that includes:

- B19 – 02: Step 1 in the BC Energy Step Code: Airtightness, Enhanced Compliance and Compliance Paths, and

Bulletin B18 – 03 (released July 2018) is a companion bulletin that provides information on the BC Energy Compliance Reports - Performance Paths for Part 9 Buildings.

What is the BC Energy Step Code?

The BC Energy Step Code is an optional performance-based compliance path in the BC Building Code (BCBC). For Part 9 buildings, it applies to residential occupancies only. Local governments may use the BC Energy Step Code, if they wish, to incentivize or require a level of energy efficiency in new construction above the requirements of the base BCBC.

What is Step 1 of the BC Energy Step Code and How is it Achieved?

Achieving Step 1 of the BC Energy Step Code requires understanding how buildings comply with the BC Building Code (BCBC). Traditionally, builders complied with the BCBC by following the BCBC’s prescriptive requirements. To improve flexibility and achieve desired outcomes, building codes have begun to move towards performance-based compliance. With this approach, codes specify the designed performance the building must achieve, and the building team determines how to achieve the performance level.

A building constructed to Step 1 is intended to have as good or better energy performance as a reference building constructed to the BCBC’s minimum prescriptive requirements for energy efficiency in Subsections 9.36.2. through 9.36.4. As such, Step 1 of the BC Energy Step Code is intended to help builders familiar with traditional prescriptive codes make a smooth transition to building to performance codes that are focused on outcomes.

To comply with Step 1 of the BC Energy Step Code for Part 9 buildings, the builder is required to do the following:

The contents of this Bulletin are not intended to be provided as legal advice and should not be relied upon as legal advice. For further information, contact the Building and Safety Standards Branch.
At the Building Permit Application stage:

- Submit an energy model of the building. The energy model can be created either in accordance with Natural Resources Canada’s (NRCan) EnerGuide Rating System (ERS) by an Energy Advisor\(^1\) qualified by NRCan, or in accordance with the requirements of Subsection 9.36.5. by an energy modeller. To comply with Step 1 of the BC Energy Step Code, builders must submit a proposed house\(^2\) energy model demonstrating that the building’s energy performance will be no worse than a reference house.\(^3\) The airtightness value of the proposed house is determined by following the guidance in Bulletin B19 – 03.
- Local building departments may require the submission of Pre-Construction BC Energy Compliance Report, described in Bulletin B18 – 03 and developed based on the requirements in Division C, Subsection 2.2.8. of the BC Building Code.
- The building plans, building energy model and Pre-Construction Compliance Report must all be consistent with each other.

At building completion (see Table 1 below):

- Conduct a blower door test to assess the airtightness of the building. This airtightness score must be reported to the Authority Having Jurisdiction (AHJ). In the ERS compliance path, the airtightness value must be incorporated into the as-built energy model, which is used to determine whether the Step 1 targets have been achieved. Under the Subsection 9.36.5. compliance path, there is no requirement to incorporate the airtightness test result into the as-built energy model. This is discussed further in Bulletin B19 – 02.
- Submit an energy model of the building as constructed, produced by an Energy Advisor or an energy modeller. This model must show that the completed building has an energy performance as well or better than the reference house.
- Local building departments may require the submission of an As-Built BC Energy Compliance Report, a companion report to the Pre-Construction Report submitted at Building Permit Application stage.

---

\(^1\) An Energy Advisor, in the context of this Bulletin, is “an individual registered with Natural Resources Canada to deliver the EnerGuide Rating System Basic Service and additional services,” as per NRCan’s “EnerGuide Rating System Standard Version 15.6,” p. 6. The term energy modellers is used in a generic sense in this Bulletin.

\(^2\) The proposed house, in the context of energy modelling, is the house as designed, with standard operating conditions such as number of occupants, appliance and hot water loads, and operating schedules as defined either by HOT2000 or by Subsection 9.36.5.

\(^3\) An ERS reference house, according to the EnerGuide Rating System’s HOT2000 User Guide, is a “copy of the (proposed) house with standard operating conditions. It is then manipulated to represent the modelled house as if it were built to the National Building Code of Canada (NBC) Section 9.36 energy-efficiency requirements.” A Subsection 9.36.5. reference house shares many of the same properties as the reference house in the ERS, but is not identical to the Reference House referred to in the ERS. The differences are discussed further in Bulletin B19 – 02.
The contents of this Bulletin are not intended to be provided as legal advice and should not be relied upon as legal advice. For further information, contact the Building and Safety Standards Branch.
The contents of this Bulletin are not intended to be provided as legal advice and should not be relied upon as legal advice. For further information, contact the Building and Safety Standards Branch.
occupants, with reduced risk of building envelope failure due to moisture problems from air leakage.

If the builder has not focused on meeting an airtightness requirement in previous projects, they may want to speak with building officials regarding the ‘No Fail Step Code Compliance Path’ option. If there is a possibility that airtightness may cause the building to fail the energy performance requirements of Step 1, the builder should review the options for complying using Subsection 9.36.5.

Resources for Airtightness

The following resources give more guidance on airtightness.

**Illustrated Guide: Achieving Airtight Buildings** - This BC Housing guide describes how to design, build and test airtight buildings, and is available online at [https://www.bchousing.org/research-centre/library/residential-design-construction/achieving-airtight-buildings](https://www.bchousing.org/research-centre/library/residential-design-construction/achieving-airtight-buildings).

**BC Energy Step Code Builder Guide** – This BC Housing guide provides information on the key strategies and approaches that builders can use to meet the BC Energy Step Code for houses and low-rise (Part 3 and Part 9) wood-frame residential buildings up to six storeys. It is available online at [https://www.bchousing.org/research-centre/library/residential-design-construction/bc-energy-step-code-builder-guide&sortType=sortByDate](https://www.bchousing.org/research-centre/library/residential-design-construction/bc-energy-step-code-builder-guide&sortType=sortByDate).

**BCIT's Airtightness Training Course** – This one-day workshop covers airtightness from top to bottom in a day. It starts with a discussion of what an air barrier is and how to define it on a project, and then shifts to a hands-on workshop that details all aspects of how an air barrier is made. More information about the course is available online at [http://www.smallplanetsupply.com/vancouver-airtightness-1](http://www.smallplanetsupply.com/vancouver-airtightness-1).

**Vendors** – Vendors of air sealing products may offer training opportunities on the job site or in product-knowledge training sessions.

More Information

Please visit [www.gov.bc.ca/buildingcodes](http://www.gov.bc.ca/buildingcodes) or [www.energystepcode.ca](http://www.energystepcode.ca).

Questions related to this bulletin can be directed to CodeQuestion@gov.bc.ca.

Acknowledgement

This bulletin was made possible by a financial contribution from Natural Resources Canada.

The contents of this Bulletin are not intended to be provided as legal advice and should not be relied upon as legal advice. For further information, contact the Building and Safety Standards Branch.